I claim:

1. A system for analysis of biological samples, comprising:

(a) a middle infrared radiation source configured to provide radiation in a spectral range of between approximately two and one half microns and approximately twenty microns;

(b) an optical fiber, operatively coupled to said middle infrared radiation source, said optical fiber being substantially transparent in said spectral range of between approximately two and one half microns and approximately twenty microns;

(c) an interchangeable fiberoptic probe associated with said optical fiber and configured to direct radiation from said radiation source to said biological sample;

(d) a detector operatively coupled to said optical fiber and configured to detect radiation reflected from said biological sample through said optical fiber; and

(d) a Fourier transform infrared spectrophotometer operatively coupled to said detector and configured to detect radiation in said spectral range of between approximately two and one half microns and approximately twenty microns.

2. The system of claim 1, wherein said interchangeable fiberoptic probe is selected from a shaped probe, a needle probe, a diffusor probe, a microscope head probe, an endoscopic probe, or a catheter probe.

3. The system of claim 1, wherein said fiberoptic probe is configured for use as an in vivo percutaneceous probe.

4. The system of claim 1, wherein said radiation has a spectral range of between approximately two point five microns and approximately twelve microns.

5. The system of claim 1, wherein said fiberoptic probe is configured to operate in attenuated total reflectance mode.

6. A method for non-invasive in vivo analysis of biological samples, comprising:

(a) obtaining a first Fourier transform infrared spectrum of a first, normal biological sample using a fiberoptic probe operating in an attenuated total reflection mode;

(b) obtaining a second Fourier transform infrared spectrum of a second, abnormal biological sample using said fiberoptic probe operating in said attenuated total reflection mode; and

(c) comparing at least one selected absorption band in said first Fourier transform infrared spectrum to at least one selected absorption band in said second Fourier transform infrared spectrum.

7. The method of claim 6, wherein said comparing comprises comparing a peak position of said at least one selected absorption band in said first Fourier transform infrared spectrum to a peak position of said at least one selected absorption band in said second Fourier transform infrared spectrum.

8. The method of claim 58, wherein said comparing comprises comparing an area under a peak in said at least one selected absorption band in said first Fourier transform infrared spectrum to an area under a peak in said at least one selected absorption band in said second Fourier transform infrared spectrum.

9. The method of claim 6, wherein said comparing comprises comparing an intensity of a peak associated with said at least one selected absorption band in said first Fourier transform infrared spectrum to an intensity of a peak associated with said at least one selected absorption band in said second Fourier transform infrared spectrum.

10. The method of claim 9, wherein said comparing comprises determining an intensity ratio for said peak associated with said at least one selected absorption band in said first Fourier transform infrared spectrum and said peak associated with said at least one selected absorption band in said second Fourier transform infrared spectrum.